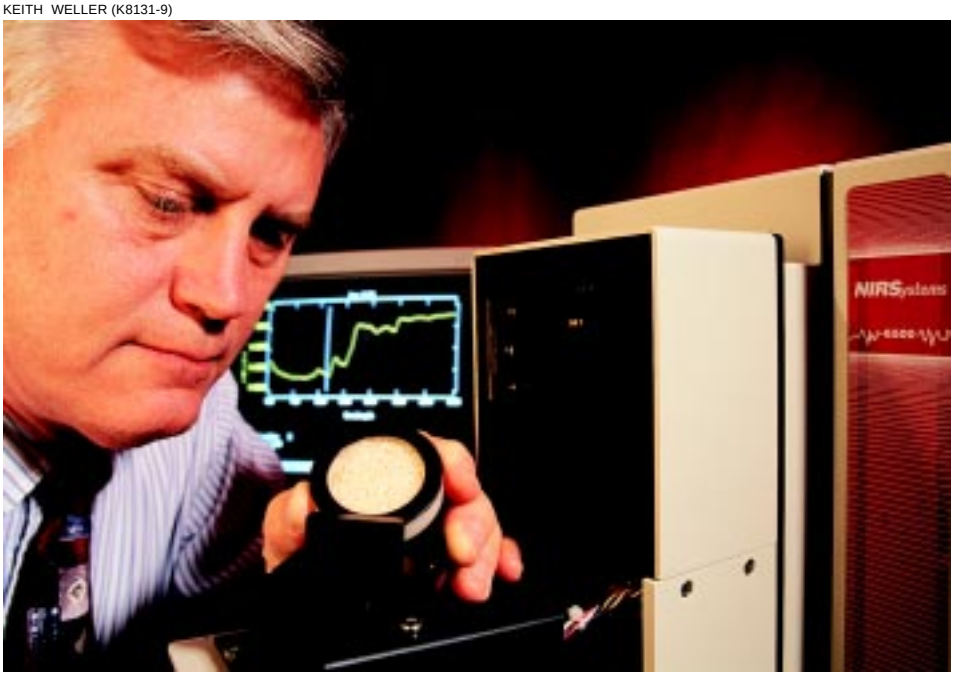
KEITH WELLER (K8131-9)



ARS chemist Franklin Barton uses a near-infrared reflectance (NIR) spectrometer to scan a sample of rice for its starch-protein ratio, while the monitor in the background shows the spectrum of the previous sample.

Barton demonstrated that any correctly calibrated NIR system could measure rice constituents and would often give good marks to U.S. rice. This prompted an international re-evaluation of how rice quality is determined.

If NIR technology could be calibrated for samples of every kind of rice grown in the world, it might be possible to have a global quality evaluator for rice that could be simply calibrated for whatever market was wanted—American high-protein, Asian high-starch, or even Indian aromatic.

A Global Taste Test

In working with Japanese scientists and others, "one of our goals all along has been to develop a universal taste tester," says Champagne. "This instrument would give an indication of what sensory properties a rice has, allowing you to find the most appropriate and highest value market for that rice."

This universal taster is not yet perfected. But the work done in Athens and New Orleans has already helped Foss North America, Inc., an international food evaluation company, to develop a new international-style rice taste-texture analyzer. It's being sold throughout Australia, with more markets planned.

To make an NIR system mimic the sensory evaluation of a person, it is necessary to first start with what humans experience when eating a food like rice.

That's where Athens food scientists Bob Windham and Brenda G. Lyon played a vital role. They joined forces with Champagne and her colleague, Karen L. Bett, to do the human taste and texture evaluations and apply them to NIR.

Lyon and Bett are experts at taste and texture panels. But their task was a big one. The first experiment involved examining the effects of drying conditions, moisture content, and degree of milling on four short- and

Disease-Resistant Rice Varieties

Jefferson, a new semidwarf rice variety, hit the market only last year but is already popular among southern farmers who must contend with fungus-caused rice diseases such as leaf blast and sheaf blight.

For an encore, ARS scientists who developed Jefferson have just released another new rice variety—Madison, which has multiple disease resistance, like Jefferson, but matures 9 days later in the season.

Madison is ready for harvest about 120 days after seedlings emerge. That's similar to other leading commercial varieties, says ARS geneticist Anna M. McClung, who heads rice research at Beaumont, Texas.

Because early-planted Jefferson and Madison mature by mid- or late July, farmers may produce a second harvest from the ratoon crop—new growth sprouting from the flooded stubble. Ratoon yields can be a third to half the main crop about 60 days after the first harvest.

Commercial seed companies can obtain foundation Madison seed through the Texas Rice Improvement Association. More than 270,000 pounds of Jefferson, worth over $200,000, were sold to seedsmen for planting in the 1997 and 1998 growing seasons. This year, an estimated 75,000 of the 270,000 acres of rice in Texas were planted to Jefferson.

In Uniform Rice Regional Nursery tests, Madison, produced long-grain rice with July crop yields similar to Jefferson. Its milling quality was found to be similar to Jefferson, Cypress, and Gulfmont varieties. ARS released Madison jointly with state agricultural experiment stations in Mississippi, Arkansas, Louisiana, and Texas.—By **Ben Hardin,** ARS.

Anna M. McClung is in the USDA-ARS Rice Research Unit, 1509 Imes Rd., Beaumont, TX 77713; phone (409) 752-5221, fax (409) 752-5720, e-mail a-mcclung@tamu.edu ◆